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Review: Babylonian Nights [Corrected Version]

Reviewed Work(s): Babylonian Planetary Omens Part Three by Erica Reiner and David Pingree; Babylonian Horoscopes by Francesca Rochberg; The Babylonian Theory of the Planets by Noel M. Swerdlow

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*Because of a printing mistake, which robbed this essay of eighteen lines of text, we reprint this essay review from ESM 4,3 (1999)*

## BABYLONIAN NIGHTS

Erica Reiner and David Pingree (eds.), *Babylonian Planetary Omens Part Three* (Cuneiform Monographs 11) (Groningen: Styx Publications, 1998), vii + 290 pp. NLG185.00; \$92.50 (hardcover) ISBN 90-5693-011-7.

Francesca Rochberg, *Babylonian Horoscopes* (Transactions of the American Philosophical Society 88.1) (Philadelphia: American Philosophical Society, 1998), xii + 164 pp. \$20.00 (paper) ISBN 0-87169-881-1.

Noel M. Swerdlow, *The Babylonian Theory of the Planets* (Princeton: Princeton U. P., 1998), xviii + 246 pp. \$39.50 (hardcover) ISBN 0-161-01196-6.

Nestled in the middle of the uncompromisingly technical survey of Babylonian mathematical astronomy in Neugebauer's *History of Ancient Mathematical Astronomy* is a short chapter of "Personal Reminiscences," in which Neugebauer recalls how in the 1930s he undertook what promised to be a modest task of collecting and reediting the cuneiform tablets of mathematical astronomy as a preparation for a small book of lectures on the topic. The edition kept growing in both size and analytical depth, in the process permanently driving Neugebauer's interests away from mathematics to astronomy, and twenty years passed before the three large volumes of *Astronomical Cuneiform Texts* ("ACT") saw the light of day. In his reminiscence, however, Neugebauer did not mention that his original project, announced in a 1937 article, was a much broader collaboration, in which several scholars were to publish the two other large corpora of Mesopotamian astral lore, the omen texts and the observational records. These parts came to nothing at the time, and it is only in the last two decades, with the rather piecemeal appearance of chunks of the great seventy-tablet omen handbook *Enūma Anu Enlil* and Hermann Hunger's monumental edition of the *Astronomical Diaries*, that Neugebauer's original intention of giving scholars access to the evidence for the full breadth of Mesopotamian astral science has begun to be fulfilled.

In the third installment of their edition of the last of *Enūma Anu Enlil*'s major divisions, comprising omens drawn from observation of the fixed stars and planets, Reiner and Pingree have collected omen texts pertaining to Venus (excepting the "Venus Tablet of Ammis aduqa," which appeared in the first installment). The edition provides transliterations and translations, accompanied by a philological commentary by Reiner and an astronomical interpretation by Pingree. The texts are preserved in fragmentary tablets written in the first millennium B.C., mostly from the library of Assurbanipal at Nineveh (seventh century B.C.), although it is probable that much of the material is much older than the oldest known manuscripts. As in other Babylonian omen texts, the omens are presented as simple conditional pairings of a *protasis* (*If* such and such a phenomenon occurs ...) and an *apodosis* (such and such events or conditions will take place). An omen text was intended to be

applied to any actual observation that had just been made and that fitted the *protasis*, and the forecast from the *apodosis* apparently was supposed to be valid for the immediate future. The *apodoses* are typical of the astral omen literature: the fates of kings, wars, weather and crops, i.e., circumstances of national rather than personal significance. To discriminate among these forecasts, the protases of the omen texts required one to look for a wide range of possible—and in some instances impossible—phenomena connected with the appearance of Venus in the morning or evening sky. We will return to some particulars of this aspect of the planetary omens presently.

The scope and methods of astral divination were not static. From the last five centuries B.C. we encounter an important innovation: about thirty tablets containing what are conventionally referred to as “horoscopes,” that is, a presentation of astronomical information pertaining to the date of birth of an individual and intended to supply the data for some sort of pronouncement about the life of that individual. These are all edited and translated, about half of them for the first time, in Rochberg’s monograph, which makes an appropriate companion to the collection *Greek Horoscopes* by Neugebauer and H. B. van Hoesen, also published by the American Philosophical Society in 1959. The Babylonian horoscopes are remarkable documents for both the history of astronomy and the history of divination, and will repay further study. In one respect they resemble the older tradition of astral omens, since the interpretations that they sometimes contain are evidently derived from collections of what would best be called astral birth omens (e.g., “If [the moon] sets its face from the middle towards positive latitude, prosperity [and] greatness,” quoted in text no. 10). What actuates the *protases*, however, is not a direct observation of the sky, but something derived from a written record or a calculation. The source of much of the astronomical information in the horoscopes appears to have been the Diary texts, in which scribes in Babylon and perhaps other cities recorded on a night-by-night basis a wide range of astronomical and meteorological occurrences that were observed or, in many cases, predicted in lieu of observation, together with commodity prices, river levels, and local and national news. Some horoscopes also give precise longitudes of the sun, moon, and planets—degrees and even minutes within zodiacal signs—which could not be directly obtained from the Diaries, and so seem to have been computed. It may not be accidental that the five horoscopes from Uruk, where we have scarce evidence of a continuous observational program, are the ones that most resemble the somewhat later Greek horoscopes in consisting exclusively of longitudes of heavenly bodies.

The period of the horoscopes seems to coincide rather closely with that during which the mathematical astronomy of the ACT texts was invented and practised. Rochberg has elsewhere presented documentary proof that, at least in the time of Greek and Parthian rule in Mesopotamia, the production of astrological tablets, observational records, and ACT tablets was the province of the same small group of scribes associated with temples in Babylon and Uruk. This discovery is more of a problem than a solution, since to anyone who has studied the details of the texts it is not at all obvious how the observational and computational astronomies interacted, or how closely they were tied to divination. Swerdlow’s study of Babylonian planetary theory dives bravely into these murky waters, with a thesis that the whole of Babylonian astronomy was directed towards divination, and an ambitious reconstruction of steps by which the Babylonian scribes could have derived the ACT planetary models from such observations as they recorded in the Diaries.

Many assyriologists take for granted that Babylonian astronomy is inextricably tied up with astrology, and fault Neugebauer and other historians of astronomy for ignoring this “contextualization;” but Swerdlow is the first to present a sustained and reasoned argument. To this end he adduces the proposition (to some extent proved) that the practitioners were the same, and appeals to the prevalence of belief in a religious cosmology that rendered the validity of omens a matter of fact (certainly true for earlier periods, but not so easy to demonstrate for the time of ACT astronomy). His primary evidence, however, is that the ACT texts predict and the Diaries record essentially the same phenomena as the omen texts take for their protases. There is much truth in this; the manner of recording eclipse observations in the Diaries, for example, shows resemblances to the eclipse omens that cannot be accidental. Oddly, the planetary omens have much less in common with the Diaries, although this is more apparent from the new edition of the Venus omens than from the omen texts embedded in the Assyrian scholars’ reports and letters on which Swerdlow mostly depends. Thus while the Diaries regularly record (and ACT predicts) positional phenomena such as stationary points and sunset risings of planets, which are absent from the omen protases, the omen texts are full of often bizarre descriptions of the “look” of the planet (“Venus flashes and her light falls on the earth,” “Venus rises and has a beard,” etc.) that have no counterpart in the Diaries. Possibly there was a shift in the understanding of what constituted a planetary omen during the middle centuries of the first millennium B.C., but we know so little about what happened to omen interpretation after the well-documented Neo-Assyrian period that speculation is particularly risky. A possibility not pursued by Swerdlow is that the ACT astronomy and the Babylonian horoscopes, which seem to have been roughly contemporary developments that both depended on the introduction of the conventional zodiac about the fifth century B.C., were somehow related in motivation.

In the body of his book, Swerdlow attempts to show how the Babylonians could have derived the numerical parameters of their ACT planetary models (not the fundamental structures of those models). The ACT models are known to us as the arithmetical rules that explain how one calculates the numbers in consecutive lines of tables of dates and positions of planetary phenomena. To get some notion of the historical problem, one might imagine how we might have tried to guess at the foundations of the astronomy of Hipparchus and Ptolemy if we had access to only the tables of Ptolemy’s *Almagest* and a collection of ancient observation reports that Hipparchus and Ptolemy might or might not have used. In the absence of any Babylonian account of how they did it, speculative reconstructions have to be judged (in order of increasing subjectivity) according to the degree to which they (1) reproduce the characteristic features of the models we have, (2) depend on observational evidence of a kind and quality attested in the Diaries and other observational texts, and (3) employ reasoning of a kind that is plausible given our knowledge of the methods of Babylonian mathematics and astronomy. Swerdlow has devoted particular attention to the second of these criteria, and has arrived at the conclusion that almost all the deductions of the ACT models had to be made from recorded dates, especially of first and last visibilities, since he is convinced that the information in the Diaries relating to the locations of planets in the zodiac could not satisfactorily be reduced to numerical longitudes. Specialists in Babylonian astronomy are definitely not in agreement on this last point, as may be seen from J. P. Britton’s severe review of Swerdlow’s book in *Journal for the History of Astronomy* 29 (1998) 381-385.

The essence of Swerdlow's argument is that the Babylonians converted empirically derived intervals between the dates of phenomena into intervals of longitude using a relation that can be interpreted as stating that phenomena of a particular kind always occur when the planet is at a specific elongation from the mean sun. Hence the mechanism for calculating planetary positions at their characteristic phenomena, which drives the whole ACT approach, is in Swerdlow's interpretation primarily a computational device for obtaining the dates.

It may be that Swerdlow's deductions are historically valid for some parts of ACT, and less so for other parts. In particular, Mercury was difficult to observe in relation to fixed stars, so that dates would have been almost the only usable information on which to found a model; Swerdlow's analysis of the models for this planet is acute and satisfying. At the other extreme, the usual relation between intervals of time and intervals of longitude is unworkable in the case of the phenomena of Venus. In the analysis of the models for Mars, however, where Britton has shown that Swerdlow's deduction from dates of visibility gives a poorer fit than would one from stations or oppositions, Swerdlow at least demonstrates the unexpected point that the apparently complex System A model could have been constructed entirely from just two extreme values of either the time between successive phenomena or the progress in longitude between phenomena. There are many other valuable insights in the technical part of the book. In spite of Swerdlow's efforts to make it self-contained, readers who have not already made at least some slight acquaintance with ACT astronomy, e.g. through the introduction to Neugebauer's edition, will probably find some parts of the analyses fairly hard going. Not the least of its merits, however, is that it will be a stimulus for students to become acquainted with the richness of Mesopotamian astronomy through the texts themselves.

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